Clonorchiasis of the Biliary Tract

A Report of Two Cases

GEORGE Q. LEE, *M.D.*, Oakland, and
ALBERT E. HIRST, JR., *M.D.*, Los Angeles

CLONORCHIASIS or Chinese liver fluke infestation of the biliary tract occurs as an endemic disease in Japan, Korea, China and Indo-China but has rarely been reported within the continental limits of the United States. Occasional cases have been reported in European and Far Eastern medical journals.[1,3,4]

Stitt and co-workers[5] reported that liver fluke infestation had been reported in fewer than 50 cases in Europe, and in only two had a fluke been surgically removed from the common bile duct. Infestation with this parasite as shown by stool examination has been recorded in Chinese inhabitants of the United States, Cuba and India, and in native Hawaiians.

Increasing frequency of infestation with *Clonorchis sinensis* in persons in this country may be expected due to the exposure of American personnel, both civilian and military, to the Orient. The disease is acquired by the ingestion of insufficiently cooked infected fish. Early recognition and treatment is important to prevent the late complications of the disease.

Reports of two cases in which the symptoms complained of were those of chronic biliary tract disease are presented herewith. In both cases, typical ova were found in the stool before operation. In one, a mature fluke was found in the common bile duct at the time of operation; in the other, ova were noted in a biopsy specimen of liver.

REPORTS OF CASES

CASE 1. A Chinese male, aged 56 years, born in China, emigrated to the United States 30 years previously. He had had symptoms of gallbladder disease for three years. Nonfunctioning of the gallbladder was demonstrated by x-ray examination. There was no history of jaundice.

The hemoglobin content of the blood was 16.5 gm. per 100 cc. Erythrocytes numbered 5,560,000 per cu. mm. and leukocytes 6,500—neutrophils 61 per cent, lymphocytes 26 per cent, and eosinophils 5.5 per cent. Results of urinalysis were within normal limits. Ova typical of *Clonorchis sinensis* were observed in a fecal specimen.

At operation the gallbladder was observed to be thick-walled and filled with numerous calculi. The cystic duct was thin-walled and slightly dilated. The liver appeared grossly normal. No specimen for biopsy was taken. No stones were found in the common duct but a small, flat, black, leaf-shaped object was scooped out from the lumen. A routine cholecystectomy was performed and a T-tube was inserted into the common duct. The patient made an uneventful recovery and was sent home with prescription of enteric-coated gentian violet.

The pathologist's report described the specimen from the common duct as a leaf-shaped fluke measuring 6 x 3 x less than 1 mm. Eggs were visible within the fluke on microscopic examination, and eggs were also found in a subsequent examination of bile obtained from the T-tube. Miracidia were released by immersing the ova in a solution of methylene blue and borax. The liberated miracidia were observed to swim about vigorously. Microscopically observed, the gallbladder wall was seen to be thickened by fibrosis and round cell infiltration, but the lining epithelium was intact.

CASE 2. The patient was a Chinese male 43 years of age who had been born in China but had lived in the United States for 20 years. He had had symptoms of gallbladder disease for seven years, with a recent episode of jaundice suggestive of extrahepatic obstruction due to stones.

The hemoglobin content was 18.0 gm. per 100 cc. of blood. Erythrocytes numbered 6 million per cu. mm. and leukocytes 9,400 per cu. mm.—neutrophils 44 per cent, lymphocytes 18 per cent, basophils 2 per cent, and eosinophils 35 per cent. Upon urinalysis a four plus reaction for bile was noted but no reaction for urobilinogen. The icterus index was 151 units, cephalin flocculation 3 plus, and alkaline phosphatase 8.2 King-Armstrong units. A plain film of the abdomen showed mild ileus. Ova typical of *Clonorchis sinensis* were observed in a specimen of stool.

A preoperative diagnosis of "extra hepatic obstructive jaundice probably due to common duct stones" was made and surgical exploration was carried out. The gallbladder was thick-walled and full of calculi. Four calculi were removed from a dilated common duct, and a fifth stone, impacted in the ampulla of Vater, was removed by duodenotomy. Cholecystectomy was done and a T-tube was inserted into the common bile duct. Upon examination of a specimen of liver (Figure 1) connective tissue proliferation and infiltration of eosinophils around the bile ducts was noted. There was necrosis of the lining epithelium in the larger ducts, and lumina were filled with pink staining debris and operculated ova of *Clonorchis sinensis*. There was fibrous thickening of the gallbladder wall consistent with chronic cholecystitis. The calculi were carefully sectioned and examined and no ova were observed.

DISCUSSION

Clonorchiasis, better known as Chinese liver fluke infestation, is caused by a fluke, *Clonorchis sinensis*, which has an affinity for the biliary tract. Infestation with this fluke is acquired by ingestion of insufficiently cooked infected fish. The parasite is a slender, leaf-shaped trematode 10 to 25 mm. in length and 3 to 5 mm. wide. The operculated ova of *Clonorchis sinensis* contains fully-developed miracidia

From the Department of Surgery, Stanford University Medical School (Lee), Department of Pathology of the College of Medical Evangelists and the Los Angeles County General Hospital (Hirst).

Submitted May 18, 1956.

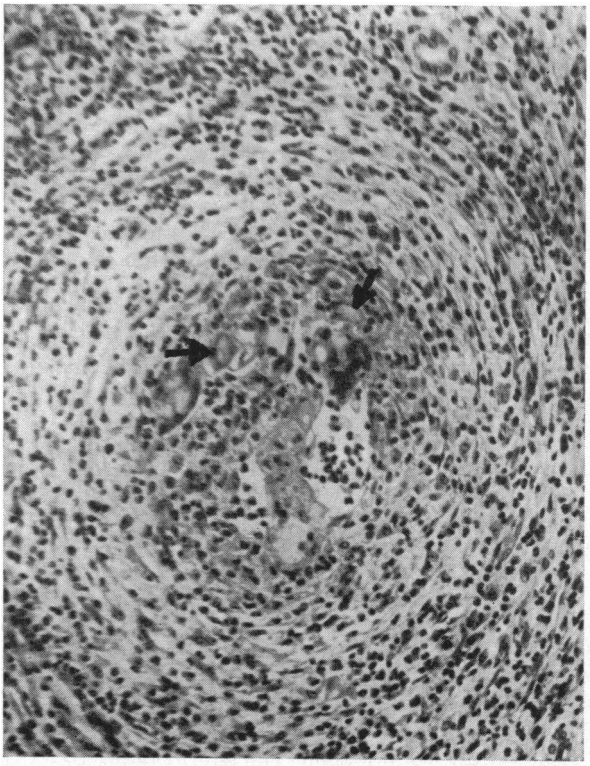

Figure 1.—Arrows point to ova in bile duct of liver. Note surrounding fibrosis and inflammatory cell infiltration, predominantly eosinophils (high power magnification).

and are said to be among the smallest ova passed by man. The eggs laid in the bile passages by the adult are discharged into the duodenum and pass into the stools. To complete the cycle, the ova must reach fresh water where they are ingested by certain species of snails to undergo a metamorphosis into a free swimming form known as cercariae. Cercariae in turn penetrate fresh water fish, and develop over a period of several weeks into cysts which are infectious to man. When insufficiently cooked infected fish are ingested by man, the wall of the cyst is broken down by the gastric juice and the organism that is liberated then migrates to the radicles of the biliary tree by ascending the common bile duct. Presence of adult flukes in the biliary tree accounts for the subsequent proliferation of the biliary epithelium, fibrosis and, rarely, cirrhosis of the liver.

Whether or not cholecystitis and cholelithiasis result secondarily from the parasitic infection in the cases here reported is not known. The possibility was considered that the parasite might have acted as a nidus for the stone formation but no evidence to support the supposition was found on careful sectioning of the calculi. It is assumed, therefore, that cholecystitis and cholelithiasis were incidental in the two cases reported. On the other hand, no evidence exists to deny the possibility that the toxin liberated by the parasite may not be one of the exciting factors to account for the disease in the gallbladder. No references are available in the literature as to the relationship between diseases of the gallbladder and infestation with *Clonorchis sinensis.*

In the cases presented, one of the patients had not been in China for 30 years and the other for 20 years. It seems doubtful that the liver fluke can survive this length of time without reinfection. The history suggests that reinfection may have occurred by the ingestion of infected fish from China in the second case, but the history is incomplete in the first case.

Suspicion of clonorchiasis should be aroused in the case of a patient, especially an Oriental, with a history of ingestion of raw fish and symptoms of gallbladder disease with or without jaundice. The finding of ova of *Clonorchis sinensis* in the stools is diagnostic of infestation. An increase in the eosinophil cells in the blood is usual. The diagnosis may be confirmed by recognition of adult flukes in the biliary tract at the time of operation or by biopsy of a specimen of liver.

In treatment, gentian violet in enteric-coated tablets is the drug of choice.[5] It is said to be curative in early infestations and may be beneficial in advanced cases.

SUMMARY

Two cases of clonorchiasis of the biliary tract in patients living in the United States are reported. Both patients had symptoms suggestive of chronic cholecystitis with cholelithiasis. The diagnosis was confirmed by finding characteristic ova in the stools in both cases and by observing a mature fluke in the biliary tree in one case and by biopsy of the liver in the other.

2968 Telegraph Avenue, Oakland 9 (Lee).

REFERENCES

1. Manson-Bahr, P., and Walton, J.: Surgical removal of *Fasciola hepatica* from common bile duct, with commentary upon this infection in man, Brit. J. Surg., 28:380-383, Jan. 1941.

2. Manual of Tropical Medicine, pp. 401-406, W. B. Saunders Co., Philadelphia, 1945.

3. Murphy, F. D., and Pascall, K. G.: Liver fluke in common bile duct, Brit. M. J., 1:647, Mar. 18, 1950.

4. Ramage, J. S.: Liver fluke removed from the common bile duct, Lancet, 1:146, Jan. 20, 1951.

5. Stitt, E. R., Clough, P. W., and Clough, M. C.: Practical bacteriology, haematology, and animal parasitology, p. 466, The Blakiston Co., Philadelphia, 1938.